

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 01-270593

(43)Date of publication of application : 27.10.1989

(51)Int.Cl.

C30B 25/02  
// C30B 29/40  
H01L 21/205

(21)Application number : 63-098759

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(22)Date of filing : 21.04.1988

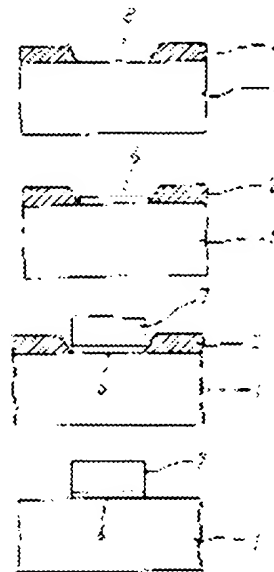
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## (54) METHOD FOR FORMING COMPOUND SEMICONDUCTOR LAYER

### (57)Abstract:

**PURPOSE:** To form a compound semiconductor layer having flat surface and prescribed thickness exclusively in a prescribed region by forming a silicon single crystal substrate covered with an insulation layer having an opening at a prescribed position and carrying out selective epitaxial growth of a compound semiconductor layer on the substrate surface exposed in the above opening using an ALE process.

**CONSTITUTION:** A silicon single crystal substrate 1 has a surface covered with an insulation layer 2 (e.g., SiO<sub>2</sub> layer) having an opening 8 at a prescribed position. The substrate is placed in a vapor growth apparatus and heated at a prescribed temperature. Raw material gases containing individual elements for constructing the desired compound semiconductor layer are introduced into the vapor growth apparatus staggering the introduction time. The above compound semiconductor layer 6 can be selectively deposited by epitaxial growth on the surface of the silicon single crystal substrate 1 exposed in the opening 8. A single crystal layer having a thickness of about 3  $\mu$ m which is required to form a semiconductor device can be produced by selectively depositing a single crystal layer 7 on the above semiconductor layer 6 by a vapor growth process which gives a high-purity single crystal at high rate of growth.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]